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Relationship of flexibility with velocity of ball in fast bowling in cricket

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Abstract

Background: The objective of the study was to find out the “relationship of flexibility with velocity of ball in fast bowling in cricket”.

Method: Sixty male cricket players (out of sixty-five, five did not complete all test items) with the age group of 17 to 25 years, from various Universities of Goa, Maharashtra and Karnataka state, were selected for the study. Velocity of ball was selected as a dependent variable and flexibility were considered as independent variable. Flex measure case with yard stick and rural guide inserted was the equipment to measure the flexibility of ankle and shoulder. Modified sit and reach test served as equipment to measure hip flexibility and Bridge up test was administered in order to assess the spine flexibility and Goniometer was used as an apparatus to measure the flexibility of wrist and velocity of ball in fast bowling was measured by dividing distance by time taken by the ball to travel that distance of 17 meters. For the present study co-relational design was used. To establish the significant relationship between flexibility with velocity of ball in fast bowling in cricket, Pearson's Product Moment Correlation was used. The significance of hypothesis was tested at 5% level.

Results: The result reveals that spine flexibility (.726), and wrist flexibility (.726) had significant correlation and contribution with velocity of ball in fast bowling in cricket shoulder flexibility (.236), hip flexibility (.015) and ankle flexibility (.099) had no significant correlation with velocity of ball in fast bowling, in cricket.

Conclusions: it is noticed that if spine flexibility and wrist flexibility increases, velocity of ball in fast bowling in cricket will also increase and if spine flexibility and wrist flexibility decreases, velocity of ball in fast bowling in cricket will decrease.

Keywords: velocity of ball, flexibility

1. Introduction

Flexibility is vital component of physical fitness which helps in synchronizing various movements. Moreover, flexibility is an essential part of life, even to a lay man, who may get possible injury from a fall while performing daily activities. Reasonably higher degree of flexibility is necessary for better performance in bowling discipline in Cricket, as it is considered that greater amount of flexibility makes the movements smooth and saves extra-expenditure of energy and reduces the resistance that must be overcome performing the running action.

Tipton suggested that flexibility aids in gaining a long stride in running. Great flexibility in the ankle, hip and trunk may overcome some of the disadvantage of possessing legs which are not extremely long, short legs and inflexible joints are a poor combination for running performance. Keeping the rate of leg movements constant, the speed of running can be enhanced by lightening the stride.

Critical feature in bowling technique, which is not properly understood, is the role of trunk flexion in the generation of ball release speed. It is commonly held that there is correlation between trunk flexion speed and ball release speed. Some coaches believe that the range of trunk extension-flexion angle is also important. Though these can be important factors, the reality of the trunk action in bowling is more complex.

During the delivery leap there is an initial trunk rotation and extension away from the intended direction of the ball. Once in delivery stride, the trunk begins to rotate and flex forwards pulling the bowling arm with it.

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However, there is a braking action on the trunk as it nears the end of its range of motion. By means of Newton's Third Law the braking action of the trunk segment further accelerates the bowling arm segments prior to ball release. Therefore, part of the reason why the trunk undergoes flexion is so that it can decelerate at the appropriate time during delivery stride. The braking action of the trunk is perhaps one reason why fast bowlers of similar speed can deliver the ball with significantly different trunk extension angles and trunk flexion rates.

Round arm and over arm bowling is a combination of momentum, gathered from a running start, and the rotation of the arm, augmented by the turn of the shoulders and the arch of the back. The question of momentum of great importance, for, although it is possible to bowl the ball some distance from a stand-still, it is quite impossible to achieve considerable speed. Almost every fast bowler of unquestionable delivery has run over a dozen yards, as it is desirable to gain momentum progressively if the bowler is to be sufficiently balanced and coordinated to utilize it when he reaches the crease. A notable exception was "Walter Brearly", eminent cricket player of Lancashire county in England, who ran only about seven yards, but was endowed with such strength of legs that he could leap over a billiards table from a standing start. Even so, he would hardly qualify for the highest class in terms of pure pace. Momentum, if in a lesser degree, is essential for the slower bowler to spin and propel the ball twenty-two yards, takes considerable efforts.

The bowling is in essence a very simple movement, but to achieve its perfection, calls for a degree of rhythm and co-ordination of the most exact and unusual order. To bowl at the pace of "Larwood" or "Hall" both great fast bowlers played for England and West Indies respectively, is an enormous physical feat, and to spin with the accuracy of "Barnes" or "O' Reilly" is a matter of quite exceptional dexterity.

To study the basic reasons behind the success of many great fast bowlers and what failed the bowler to overcome the batsman's performance, it is required to search the components of physical fitness. On the basis of which further improvement can be brought to the fast bowling discipline in cricket. Latest research has enabled the coaches and trainers in the field of cricket to evaluate even the minute thing required for fast bowling. In this study the research scholar has tried to find out the relationship between velocity of ball in fast bowling and flexibility of the bowlers.

1.1 Objective of the study

The objective of the study was to find out the "Relationship of flexibility with velocity of ball in fast bowling in cricket".

2. Methodology

2.1 Subjects

Sixty male cricket players (out of sixty-five, five did not complete all test items) with the age group of 17 to 25 years, from various Universities of Goa, Maharashtra and Karnataka state, were selected for the study on the basis of having represented their respective Universities for minimum one year. Their performance at inter-college and inter-varsity level cricket in the past three years was also considered. With

majority of subjects being day scholars a few were staying in hostels of their respective colleges affiliated to these Universities. These subjects were picked up for this study because of their willingness to participate in the study and their consciousness towards improving speed in bowling.

2.2 Variable

Velocity of ball was selected as a dependent variable and flexibility were considered as independent variable.

2.3 Criterion Measure

Flex measure case with yard stick and rural guide inserted was the equipment to measure the flexibility of ankle and shoulder. It was recorded by the best three trials in inches. Modified sit and reach test served as equipment to measure hip flexibility, in inches. Three trials were given and the best score was recorded. Bridge up test was administered in order to assess the spine flexibility. It was recorded from the best score among the three trials, in inches. Simple Goniometer was used as an apparatus to measure the flexibility of wrist. Scoring was done in the degrees. Three trials were given and the best score was recorded and velocity of ball in fast bowling was measured by dividing distance i.e. the distance of 17 meters (Leaving 3.1168 meters from the bowling end) between the two ends of cricket pitch, and the time taken by the ball to travel that distance. Best of three trials in Kilometer / Hour was recorded as velocity of ball in fast bowling. A steel tape was used to measure the 17 meter distance from the middle of the stumps at the batting end towards the bowling end. Time taken by the ball to travel this distance was recorded by stop watches, which had a capacity to measure up to hundredth of a second.

2.4 Design of the study

For the present study co-relational design was used.

2.5 Collection of Data

The test to assess the velocity of ball in fast bowling was administered on the University cricket grounds. Other tests were conducted at the Gymnasium of the same institute. All the students were staying in the nearby residential areas of the respective universities which facilitated the investigator in collecting the data without much inconvenience.

Before the administration of tests the subject became familiar with various test items. The use of equipments was explained and clearly demonstrated prior to administration of tests. To ensure uniform testing conditions the subjects were tested between 3 p.m. to 6 p.m. for flexibility. The test to measure velocity of ball was administered from 10 am to 11 am in the morning session to facilitate the time keepers with clear vision of the release of ball and its crossing over the other end of the wicket.

2.6 Statistical Analysis

To establish the significant relationship between flexibility with velocity of ball in fast bowling in cricket, Pearson's Product Moment Correlation was used. The significance of hypothesis was tested at 5% level.

3. Findings

Table 1: Mean, Standard Deviation and Coefficient of Correlation of Flexibility

Variables		Units	Mean	Std. Dev.	"r"
Dependent	Independent				
Velocity	Ankle Flexibility	Inch	53.03	8.52	.099
	Spine Flexibility	Inch	9.74	2.64	.726*
	Hip Flexibility	Inch	94.40	17.72	.015*
	Shoulder Flexibility	Inch	29.62	37.12	.236
	Wrist Flexibility	Degree	9.62	2.09	.762*

*Significant at $r_{.05}^{(58)} = .250$

The Above table showed that the mean and the standard deviation of fitness variable, Ankle Flexibility was found to be 53.03 ± 8.52 inches, Spine Flexibility 9.74 ± 2.64 inches, Hip Flexibility 94.40 ± 17.72 inches, Shoulder Flexibility 29.62 ± 37.12 inches and Wrist Flexibility 9.62 ± 2.09 degrees.

The above table indicated that the relationship between Velocity of ball in fast bowling in cricket and Spine Flexibility (.726) and Wrist Flexibility (.762*) a significant relationship was found as the value of coefficient of correlations was higher than the tabulated value of (.250) at 0.05 level. In case of Ankle Flexibility (.099), Hip Flexibility (.015) and Shoulder Flexibility (.236) an insignificant relationship was found as the value of coefficient of correlation was lower than the tabulated value (.250) at 0.05 level.

4. Discussion

As already mentioned by Richardson wrist flexibility had significant relationship with throwing velocity. So, in the present study also significant relationship was found with wrist flexibility and velocity of the ball. Further, for the sample survey, 69.5% of the variation in Velocity of Ball in Fast Bowling in Cricket was explained by the area of Wrist Flexibility, Spine Flexibility and Hip Flexibility. In totality effect it was 6.95%. Tipton suggested that flexibility aids in gaining a long stride in running. Great flexibility in the Hips, Trunk and ankles may overcome disadvantages of not possessing long legs. Short legs and inflexible joints are a poor combination for running performance. Keeping the rate of leg movements constant the speed of running can be increased by lengthening the stride, and for that Hip, Trunk and Ankle flexibility are to be developed. The present study clearly indicated the significant contribution of Hip and Spine flexibility with velocity of ball in fast bowling. It might be because a smooth and proper bowling acting may assist in a correct manner for releasing the ball and might provide an extra effect in the velocity of ball.

5. Results/Conclusions

Based on the findings and within the limitation of the study it is noticed that that spine flexibility (.726) and wrist flexibility (.762) had significant correlation and contribution with velocity of ball in fast bowling in cricket. Shoulder flexibility (.236), Hip flexibility (.015) and Ankle flexibility (.099) had no significant correlation with velocity of ball in fast bowling, in cricket.

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